

This listing of claims will replace all prior versions,
and listings, of claims in the application:

1 Claim 1 (currently amended): A ~~camera~~ photographing
2 device provided with a dust removing mechanism
3 comprising:
4 a photographing optical system which forms
5 an optical image
6 of an object;
7 a photoelectric conversion element which converts
8 the optical image into an electric signal;
9 an optical element arranged between the
10 photographing optical system and the photoelectric
11 conversion element in such a manner as to seal the
12 photoelectric conversion element; and
13 ~~vibration means which vibrates the optical element~~
14 ~~first at one of at least two frequencies and then at the~~
15 ~~other frequency, said frequencies being close to~~
16 ~~resonance frequencies.~~
17 a piezoelectric element provided at a peripheral
18 portion of the optical element;
19 a drive circuit which supplies a period drive signal
20 to the piezoelectric element to vibrate the piezoelectric
21 element, thereby vibrating the optical element; and
22 a control circuit which changes a frequency of the
23 periodic drive signal to a plurality of frequencies close
24 to two or more resonance frequencies different in order
25 from each other, to thereby cause the optical element to
26 be vibrated at the plurality of frequencies in turn.

1 Claim 2 (currently amended): The ~~camera~~ photographing
2 device according to claim 1, wherein the ~~vibration means~~

3 control circuit controls the frequency of the period
4 drive signal ~~vibrates~~ to vibrate the optical element
5 first at a frequency close to a low-order resonance
6 frequency for a predetermined time and then at another
7 frequency close to a high-order resonance frequency for
8 another predetermined time.

Claim 3 (canceled)

1 Claim 4 (currently amended): A ~~camera~~ photographing
2 device provided with a dust removing mechanism
3 comprising:
4 a photographing optical system which forms
5 an optical image of an object;
6 an ~~imaging~~ photoelectric element which converts the
7 optical image into an electric signal;
8 ~~a dust filter~~ an optical element arranged between
9 the photographing optical system and the imaging element
10 in such a manner as to seal the photoelectric element;
11 a piezoelectric element ~~which vibrates the dust~~
12 ~~filter~~ provided at a peripheral portion of the optical
13 element to vibrate the optical element;
14 a drive circuit which drives the piezoelectric
15 element; and
16 a control circuit which outputs control signals for
17 driving and controlling the drive circuit,
18 wherein the control circuit first outputs a control
19 signal for causing the ~~dust filter~~ optical element to
20 undergo a low-order resonance vibration and then a
21 control signal for causing the ~~dust filter~~ optical
22 element to undergo a high-order resonance vibration.

Claim 5 (canceled)

1 Claim 6 (currently amended): The ~~camera~~ photographing
2 apparatus according to claim 4, wherein the low-order
3 resonance vibration is primary vibration having one node,
4 and the high-order resonance vibration is secondary
5 vibration having two nodes.

Claims 7 and 8 (canceled)

1 Claim 9 (currently amended): A ~~camera~~ photographing
2 device provided with a dust removing mechanism
3 comprising:
4 a photographing optical system which forms
5 an optical image of an object;
6 ~~imaging means~~ a photoelectric conversion element
7 which converts the optical image into an electric signal;
8 an optical element arranged between the
9 photographing optical system and the imaging means in
10 such a manner as to seal the photoelectric conversion
11 element;
12 ~~vibration means which causes the optical element to~~
13 ~~undergo standing wave vibration,~~
14 ~~wherein vibration means vibrates the optical element~~
15 ~~such that the number of vibration nodes changes with~~
16 ~~time.~~
17 a piezoelectric element provided at a peripheral
18 portion of the optical element;
19 a drive circuit which supplies a period drive signal
20 to the piezoelectric element to vibrate the piezoelectric
21 element thereby vibrating the optical element;
22 and

23 a control circuit which causes the optical element
24 to generate standing-wave vibration, and controls a
25 frequency of the periodic drive signal to cause nodes of
26 the standing-wave vibration to be successively shifted.

1 Claim 10 (currently amended): The ~~camera~~ photographing
2 device according to claim 9, wherein the ~~vibration means~~
3 ~~vibrates the optical element such that the number of~~
4 ~~vibration nodes increases with time~~ control circuit
5 controls the periodic drive signal to cause the nodes of
6 the standing-wave vibration to be shifted at
7 predetermined intervals.

Claims 11 and 12 (canceled)